

14. (Amended) A bus comprising:

a transmission line having a characteristic impedance;  
a pMOSFET driver having a drain connected to the transmission line and a source at a voltage  $V_{CC}$ ; and  
at least one termination device connecting the transmission line to ground to match the characteristic impedance of the transmission line.

18. (Amended) A bus comprising:

a transmission line having a termination device to reduce signal reflections;  
a pMOSFET driver to drive the transmission line, the pMOSFET driver having a source connected to a voltage source so as to be biased to a voltage  $V_{CC}$ ;  
a nMOSFET driver coupled to the transmission line, the nMOSFET driver having a source at a substrate voltage  $V_{SS}$ ; and  
a combinational logic circuit coupled to the nMOSFET driver.

### Remarks

Claims 1-21 are presently active.

In the office action dated 14 March 2001 ("Office Action"), claims 1-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lamphier et al., U.S. patent 5,666,078 ("Lamphier") and Kaplinsky, U.S. patent 5,568,062 ("Kaplinsky").

Applicants respectfully traverse the rejection for the following reasons.

In item no. 3 of the Office Action, Lamphier is cited for providing all the essential elements of the claimed invention except for whether a pullup device is a pMOSFET or an nMOSFET, and Kaplinsky is cited for teaching that a pMOSFET and a nMOSFET

may be used interchangeably for a pull-up transistor. Without touching upon the merits of Kaplinsky, Applicants believe that Lamphier fails to disclose all the claimed elements.

Lamphier teaches a programmable impedance output driver. The resistor RQ (22) in Fig. 1 of Lamphier is an external resistor used for programming a desired impedance for the output driver circuit. (See Lamphier, column 3, second full paragraph, as well as claim 1 lines 2-3.) However, the termination device recited in the present invention is a termination device used for terminating the transmission line. That is, its impedance is chosen to match the characteristic impedance of the transmission line in order to reduce signal reflections. It is not used to match the impedance of the driver to the transmission line.

In particular, note that it is stated in column 3, second full paragraph of Lamphier that the external resistor RQ is 5 times the desired output driver impedance. In contrast to Lamphier, in the present invention, the termination device is not dependent upon the driver impedance. As discussed above, it is chosen to reduce signal reflection on the transmission line, and this choice of termination impedance is independent of the driver output impedance. Clearly, the external resistor taught in Lamphier is not a termination device to reduce signal reflection on the transmission line.

To better define and more particularly point out the invention, independent claims 1 and claim 14 are amended to particularly point out that the termination device has an impedance matched to the characteristic impedance of the transmission line. Claim 18 is amended to particularly point out that the transmission line has a termination device to reduce signal reflections. The other independent claims, claims 8 and 16, already have the limitation that the impedance device reduces signal reflection on the transmission line.

Therefore, for the above reasons, Applicants believe that Lamphier fails to disclose all the claimed elements (with the exception of whether the pullup is a pMOSFET or nMOSFET). Furthermore, because the external resistor taught in Lamphier is for the purpose of programming the output impedance of the driver and not for matching the characteristic impedance of the transmission line, or similarly, reducing signal reflection on the transmission line, Lamphier teaches away from the present invention, and therefore, whether taken separately or in combination with Kaplinsky, does not suggest or motivate the present invention.

Consequently, Applicants believe that the present invention is patentable over the cited references.

Respectfully submitted,

Seth Z Kalson Dated: Sept. 17 2001

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Version of Amended Claims with Changes

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1. (Amended) A bus comprising:

a transmission line having a characteristic impedance;

a pMOSFET driver to drive the transmission line, the pMOSFET driver having a source connected to a voltage source so as to be biased to a voltage  $V_{CC}$ ; and

at least one termination device connecting the transmission line to ground to match the characteristic impedance of the transmission line.

14. (Amended) A bus comprising:

a transmission line having a characteristic impedance;

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18. (Amended) A bus comprising:

a transmission line having a termination device to reduce signal reflections;

a pMOSFET driver to drive the transmission line, the pMOSFET driver having a source connected to a voltage source so as to be biased to a voltage  $V_{CC}$ ;

a nMOSFET driver coupled to the transmission line, the nMOSFET driver having a source at a substrate voltage  $V_{SS}$ ; and

a combinational logic circuit coupled to the nMOSFET driver.